

WHAT IS CLAIMED IS:

1. A composite vibrator comprising:  
a plurality of tuning bar vibrators having the same length; and  
support members for supporting the tuning bar vibrators;  
wherein the tuning bar vibrators with both ends free are arranged in a direction orthogonal to the longitudinal directions thereof and are coupled with each other in the vicinity of nodes of bending vibrations.
2. The composite vibrator according to Claim 1, wherein the plurality of tuning bar vibrators includes at least two tuning bar vibrators having the same configuration.
3. The composite vibrator according to Claim 1, wherein each tuning bar vibrator has an electrode to which a signal for exciting the tuning bar vibrator is applied and an electrode from which a signal corresponding to bending vibration of the tuning bar vibrator in a direction orthogonal to the direction of excitation is output.
4. The composite vibrator according to Claim 3, wherein adjacent tuning bar vibrators are excited in

mutually opposite directions.

5. The composite vibrator according to Claim 1, wherein a resonant frequency in the exciting direction of at least one of the tuning bar vibrators coincides with a resonant frequency in the direction orthogonal to the exciting direction.

6. The composite vibrator according to Claim 3, wherein at least two electrodes formed in the longitudinal direction of a main surface of each tuning bar vibrator are arranged at a predetermined distance in the width direction thereof.

7. A vibration gyroscope comprising driving unit for driving the composite vibrator according to Claim 1 and detecting unit for detecting an angular velocity via the composite vibrator.

8. An electronic apparatus comprising the vibration gyroscope according to Claim 7.

9. A method of manufacturing a composite vibrator comprising:

a first step of bonding an auxiliary substrate to a

second main surface of a base substrate;

a second step of completely cutting the base substrate from the direction of a first main-surface side of the base substrate while leaving a part of the auxiliary substrate to form a plurality of tuning bar vibrators arranged in a width direction, the relative positions of the tuning bar vibrators being retained by the auxiliary substrate;

a third step of bonding support members to the first main surfaces of the tuning bar vibrators; and

a fourth step of separating the auxiliary substrate from the second main surfaces of the tuning bar vibrators.

10. The method of manufacturing a composite vibrator according to Claim 9, wherein the base substrate has electrodes formed on both main surfaces thereof.

11. The method of manufacturing a composite vibrator according to Claim 9, wherein the base substrate is formed by bonding two piezoelectric substrates polarized in mutually opposite directions with respect to the thickness direction thereof.

12. The method of manufacturing a composite vibrator according to Claim 9, wherein the base substrate is formed by bonding a conductive substrate to a piezoelectric

substrate polarized in the thickness direction.

13. The method of manufacturing a composite vibrator according to Claim 9, wherein the second step includes forming grooves along one of the longitudinal and width directions on the first main surfaces of the tuning bar vibrators.

14. The method of manufacturing a composite vibrator according to Claim 9, wherein the third step includes bonding the support members in the vicinity of nodes of bending vibrations of the tuning bar vibrators with both ends free.

15. The method of manufacturing a composite vibrator according to Claim 9, further comprising a fifth step of bonding support members to the nodes on the second main surfaces of the tuning bar vibrators after the first to fourth steps are performed.